

AVIATION

The Oldest American Aeronautical Magazine

DECEMBER 19, 1927

Issued Weekly

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An Army blimp passing over the radio towers at Arlington, Va.

(Aeroe)

VOLUME
XXIII

Special Features

NUMBER
25

The D.H. "Tiger Moth"
The Air Cooled Liberty
The Second National Aeronautics Conference

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TOLEDO
PUBLIC

IT'S IN THE AIR



THE man in the street is thinking about aviation. Not much of military aviation. Not merely of the sensational flights successful or tragic which have prepared the news of 1927. But also of commercial flight. He doesn't know much about it. But he's looking forward eagerly to the day when aviation will be for him. And he is expecting great things—soon, too, in the future.

All of us connected with the manufacture and operation of aircraft are inclined to feel that aviation is well ahead of public appreciation. We know that flying is well-designed, well-constructed machinery handled by competent pilots is a safe, swift and capable form of transportation. The public, however, does not. It admires the speed—but it also has a skeptic about safety and experience.

The industry has succeeded refreshingly in the mechanical development of aircraft. The wonderful

effort the industry has expended on mechanical progress, however, has not paralleled by a similar effort along educational lines. The public needs to be educated about flying. It cannot, of itself, become air-minded. It wants to be "sold" aviation.

The aviation advertising published in the great national magazines by the Ford Motor Company is dedicated to this educational work. It goes on to further the cause of aviation and the aircraft industry by selling the public the achievements of the industry in making flying safe, swift and inexpensive under present conditions, with present equipment.

The man in the street is eagerly awaiting the day when flying will be for him. This advertising is devoted to the work of convincing him that *that day* has already arrived.

THE FORD MOTOR AIRPLANE COMPANY
Because of Ford Motor Company December 19, 1927



Their CHOICE...

SHOULD guide you... the selection and purchase of Fairchild "All-Purpose" Cabin Monoplanes by these outstanding organizations and operators is the best endorsement of real value we have built into the 'plane. If you are looking for the utmost in performance, workmanship and service, you, too, will find in Fairchild everything an airplane can offer.

AMERICAN AIRCRAFT COMPANY,
Los Angeles, California

BROOK & WEYMOUTH,
Philadelphia, Penn

CURTIS FLYING SERVICE,
Garden City, Long Island, N. Y.

COLONIAL AIR TRANSPORT,
New York City

DEPARTMENT OF NATIONAL DEFENSE OF CANADA

DENISON AIRCRAFT CORPORATION,
Boston, Mass.

FAIRCHILD AVIATION LTD.,
Great Britain, Canada

E. M. JONES,
Norwalk, N. Y.

LUDINGTON FRAZER & PHILIPPI
FLYING SERVICE,
Philadelphia, Penn

NEW ENGLAND AIRCRAFT CORPORATION,
New Bedford, Conn.

POTOMAC FLYING SERVICE,
Washington, D. C.

E. M. RODDIE,
Buffalo Airport, Buffalo, N. Y.

U. S. DEPARTMENT
OF COMMERCE

U. S. NAVY
DEPARTMENT

WESTERN CANADIAN AIRWAYS,
Winnipeg, Manitoba, Canada

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FAIRCHILD AIRCRAFT MANUFACTURING CORPORATION, FAIRFIELD, CONN., U. S. A.





The distance of a Trans-Pacific hop is daily flown by "Wasp" engines with the Transcontinental Air Mail

More than 4,000 miles daily in the routine performance of the "Wasp" equipped Boeing mail ships. Over plain and desert, the high Rockies and Sierra Nevadas, through heat and cold, rain and fog, the modern "Pony Express" carries on.

This difficult mission requires the utmost skill and daring of the pilot and the finest equipment. The success of the Transcontinental Air Mail is the outstanding feature of American commercial aviation.



THE
PRATT & WHITNEY AIRCRAFT CO.
HARTFORD CONNECTICUT

DEPENDABLE ENGINES

TRANSMIGRATION OF TRANSPORTATION



ON
The crescendo roar of powerful motors . . . on land . . . in the air . . . energy in fuel . . . volatility . . . limitless force.

NATURAL GASOLINE
(Use NATURALINE for Airplanes)



CHESTNUT & SMITH CORPORATION
CHESTNUT & SMITH BUILDING --- TULSA, OKLAHOMA

SEVEN CURTISS "FALCONS"



A-3 "Falcon" Two Seater Ground-Attack Type

SEVEN modifications of the "Falcon", standard two-place observation airplane of the Army Air Corps, are now being produced for the military air forces of the United States.

The "Falcon" is being produced as an observation plane with either the Curtis D-12, the Liberty, or the Pratt and Whitney Wasp engine, for the Army Air Corps and the Marine Corps.

It is also being produced as an attack plane with the D-12 or the Wasp engine for the Army Air Corps and the Marine Corps.

Thus — like the single seater Curtiss "Hawk" — the original "Falcon" has evolved into a series of twoplace types, each being particularly fitted to fulfill some special requirements of military air operations.

The CURTISS AEROPLANE

Offices
Garden City, N. Y.

Curtiss

AND MOTOR CO., Inc.

Factories:
Garden City and Buffalo, N. Y.

Laird gets the call from the Department of Commerce!

If anyone is in position to judge the merits of commercial planes, certainly it is the Department.

It is significant that with complete knowledge of American ships and their manufacture the Department of Commerce should include Laird in equipment for its inspectors.

Probably no other organization is in as close touch with commercial aviation as the Department of Commerce. We are rightfully proud of the fact that Laird ships N-5-9 and N-5-10 have been purchased for transportation of its inspectors.

This is singular recognition of the sturdy quality in Laird design and manufacture. Recognition from those

E. M. LAIRD AIRPLANE COMPANY

Patented by E. M. Laird, Chicago, Illinois, December 19, 1925.

— 4500 West 83rd Street, Chicago, Ill.

well qualified to judge.

This specification by the Department of Laird ships, combined with the complete Laird victory in placing one-two with two entries in the National Air Derby, September, 1927, is quickly bringing Laird to the foreground in American aviation.

Commercial plane users are invited to send specifications for our suggestions.

We urge responsible commercial plane users to allow us to demonstrate Laird ships without cost or obligation.



Investigate the Quality, Spread and Influence of AVIATION Circulation

THE facts will convince you that AVIATION covers more intensively than any other publication, the market for all aircraft products.

AVIATION is the choice of engineers, manufacturers, distributors, operators and pilots, and leaders of the field.

Above this group — your market — AVIATION has never readers than any other aircraft publication.

AVIATION, because it is the recognized trade paper of the air industry, is selected by business executives who are planning to use airplanes.

AVIATION is asked for and preferred by the standard. You do not pay for "Popular Color" when in AVIATION.

ALL the facts upon which these statements are based. AVIATION, 200 West 35th Street, New York City.

AVIATION

The Oldest and Only Trade Weekly Aircraft Publication

Over 1000 Inquiries From a Single Ad

THE following is an extract from an unselected letter from Romeo Soltvedt Roemer, advertising agency of the Glenn L. Martin Corporation, telling of the results received from a single page advertisement in AVIATION:

"When I first wrote you concerning the results of the one page advertisement we ran by the Glenn L. Martin Corporation in your November 7th issue, they had received a little better than 100 inquiries. I am glad to report that the number of inquiries from that one ad now exceeds the 1000 mark!"

Considering these returns, it is not hard to understand that the Glenn L. Martin Corporation is thoroughly sold in your paper.



"Nothing accepted on past performance"

THESE five words express the platform and governing principle of the research program now under way in the shops, laboratories and draughting rooms of The Glenn L. Martin Co.

No element of design—no detail of construction—no item of material is being approved for further use with-

out re-study and scrutiny and an exhaustive search for something better, even though the margin of the particular improvement achieved may seem in itself insignificant.

Out of this research notable and far-reaching advances in the art of aeronautics are taking form.



THE GLENN L. MARTIN COMPANY

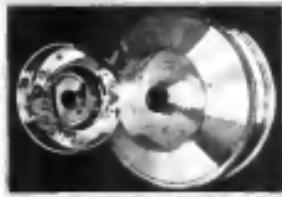
Subsidiary of *Quality Aircraft Manufacturing Corp.*
CLEVELAND, OHIO



The FAIREY CABIN MONOPLANE was the first monoplane airplane fitted with Bendix Ladden Wheels and Brakes. These proved so satisfactory on the Langley tour that they are now fitted as standard equipment.

Announcing BENDIX wheels and brakes for airplanes

Bendix Brakes and Bendix-Ladden Wheels are now in production in all standard sizes.



Wheel and brake form a single complete unit, possessing these important features—

- | | |
|------------------|-----------------|
| perfect strength | high efficiency |
| unusual strength | light weight |
| precision-built | water-tight |

The Bendix Brakes specially designed for Airplane service are constructed on the same basic principles as the internationally known Bendix Automobile Brakes.

BENDIX BRAKE COMPANY
General Office and Plant - South Bend, Indiana
Divisions of BENDIX Corporation - Chicago

BENDIX  **BRAKES**
FOR SAFETY

Testimonials from prominent Aviators and Engineers



The Oldest American Aeronautical Magazine

No. XXII

DECEMBER 19, 1927

No. 25

The Washington Conference

CONFERENCE AND conventions are wonderful changes for almost every one seems to have a different point of view and it is almost impossible to reach even an approximately unanimous agreement on anything.

The Department of Commerce's conference on international aviation was no exception. There were about as many points of view as there were people present but there is no doubt that the conference was valuable to all those who attended and that many good ideas were brought forward. On the whole the meetings merely underscored the actions of the Department during the past year but expressed the hope that the regulations would not be greatly extended or complicated.

The meeting voiced the sentiments of men who have worked hard and who have had their work rewarded by success and good prospects for the coming year. There was a spirit of cheerfulness, humor and a desire to get together and cooperate which was markedly different from conditions in the aeronautical industry a few years ago. Outside of a few professional associations and a few aeronautical societies almost all the speakers presented viewpoints which were constructive and there was little bitterness shown in the past.

It would be safe to say that the aeronautical industry has had meetings of military importance. This year's was probably the largest aeronautical conference ever held in this country. It is to be hoped that there will be another conference next year.

The Twenty-fourth Anniversary

ON DEC. 17, the twenty-fourth anniversary of the first flight in a controlled airplane was celebrated. For many years, that has been the occasion of review of the progress that has been made in aviation since the first flight. Orville Wright flew his experimental plane a few hundred yards at Kitty Hawk. This year there is no room to record that it would require a whole issue of AVIATION to give even the narrow outline of the progress made.

So long as the future two very important matters shall be given general consideration. The first is the final inspection of the first airplane that flies. Last year, every American who started to read that Mr. Wright had decided to place this great scientific interest outside the death chamber was anxious to learn more. Fortunately it was later learned that such a decision was only to be temporary. The public may emphatically express its desire to see that the first machine to fly be placed in an American museum in a place worthy of its importance. Unfor-

tunately, the Langley tradition has always bedeviled the efforts of the Smithsonian Institution scientifically, so that it cannot be expected that Mr. Wright would permit his precious exhibit to be permanently given to a museum which he has found partial in the past. It is a regrettable situation but we can only well be satisfied except by a demand on the part of the public. This should be forthcoming without delay and the year of the twenty-fifth anniversary of the first flight should find this uncertainty removed.

The other desire to be made rests with Congress. A bill is to be introduced carrying an appropriation for a memorial to mark the site of the first flight at Kitty Hawk. At the last session of the fifth Congress a bill, introduced in the Senate by Senator Hiram Johnson and in the House by Representative Warren, was passed and signed by the President, which provided for the erection at a cost of \$100,000 of a bronze tablet on Dec. 17, 1928, Orville Wright made the first successful flight in a heavier-than-air machine. The bill renamed a Committee composed of Senators Davis, Wilson and Hoover to decide upon the type of monument, and with the report of this Committee in expectation shortly. Congress in its present favorable attitude toward aviation will undoubtedly see that this project is given early consideration.

The Ideal Training Plane

AN IDEAL training plane for civilian instruction would be different in many important characteristics from the commercial planes which are now employed for the purpose. For example the training plane need not have the speed of the high-speed plane designed for aerial racing or racing work but on the other hand it should be made highly tractable so as to withstand the rough usage of the beginner. On the score of cost the difference between a commercial and a training plane are not so markedly separated for there are many who still believe that it is safer in the long run to learn on a plane which is truer and handier to fly.

A plane for training would be of comparatively low horsepower and it should be so ruggedly constructed that it could be safely to mount. Its initial cost should be low as the fixed cost itself would not have to be raised as that required for commercial planes. In brief, a plane specially designed for training purposes would certainly be more economical and give better results than one which was primarily designed for passenger carrying and for cross-country work.



Some of the 1,000 men who attended the Second National Aeronautics Conference held at Washington, D. C.

The Second National Aeronautics Conference

Large Attendance and Frank Discussion Features Five Day Meeting

By R. SHIRLEY HOWE JR.

INFORMATION on second national aeronautics conference held at the Department of Commerce, Washington, D. C., Dec. 10-14, three days longer than originally intended.

From the large and representative attendance, it has been stated that an average of over 300 members of the industry from all parts of the country attended the five day session. In fact so great became the number of delegates that on the last two days the conference was forced to conduct its meetings in rooms at the Department of Commerce, leading to twice of a larger room in the F. B. I. Chamber of Commerce building.

Besides the services of the members from the standpoint of input there were also many delegations from foreign governments and commercial interests brought up who could not attend, and at no time was there less than thirty delegations to the meetings to expense government cars and expenses. It proved to be a conference in every sense of the word.

Third, the whole aeronautics industry of both manufacturer and operator is to submit to the enactment of additional rules, regulations and restrictions. This feature was much to discuss throughout the entire conference and several short addresses that the American aviation publics were to consider that it should stand on record that no progress without government participation.

In making the first day session in addressed Secretary of Commerce for Aeronautics, William P. MacCracken, Jr., conference chairman, pointed out that the conference had been called for an

exchange of opinions and ideas and that each was to give his or his organization's point of view as well as the discussion that ensued. He made clear that the proposed new laws would not be in order until a code of ethics was adopted by the various organizations.

Mr. MacCracken then introduced Secretary of Commerce Edward H. Rumford who welcomed the delegates and said a few words.

Then a motion was voted in order to have a further understanding of the particular problems in which the aircraft industry and the government were interested. It was voted that the policy of this department is to see that as many as possible with their present group whom it is seeking to have on their to impose regulation without delay. "Regulation promises to be made by mid January this year and after the next year we should see what would put together with a more definite plan."

The first question that came up was that of the proposed legislation for commercial airplane drivers. The first to come forward against the bill was C. E. Smith of the Aeroplane Corporation, who as chairman of the performance conference held in New York headquarters of the American Chamber of Commerce a few days prior to the Washington meeting, said the New York meeting wanted to see and be against such regulation. It was a unanimous influence why flying to suffice the growth and development of aviation. Mr. Jones added need of some sort of a guide to do

that it should originate in the industry and not in Congress.

Mr. power aeronautics Secretary MacCracken stated that as a whole was of much importance but rather than it being an industry's book or the Department's book it would be better of the two. In reference to the present suggestion that a committee of engineers be appointed to sit upon the codification of aircraft standards which will serve as "a guide to the industry."

Others who also opposed the handbook were Paul Bierendorf of the N.A.T.A., William Smart of the Ford Motor Co., and R. H. C. Newland of the Atlantic Aircraft Corp. It was then voted that the writer's draft could best be left to the industry as its own standard and that the department should not be involved in it at this time. Mr. Frank Loomis, who was the editor of a proposed handbook, also voted the same.

It was voted that the American Association of Aeronautics should be given the responsibility of carrying on the handbook although he expressed the fact that it would not be in order for the smaller associations.

Another who expressed his agreement on the subject was W. A. Brown of Pioneer Locomotive. He felt that if the small association which comes into preparing in early stages could be based on the hand methods of an older organization could be used as a present measure of a good governmental technique.

Y. M. McLean, secretary of the Canadian delegation of the handbook, told the Canadian delegation of the handbook, he would like to express the opinion that it is estimated to be about three years for a standard code on which the government to work. In his estimation it will be approximately eighteen months which could be voted on the basis of working process.

George Chamberlain was voted to submit his views and later that he was absolutely against any handbook for airplane passengers. He felt that the matter could not be satisfactorily care of by Department of Commerce meeting on future inspection.

At conclusion of the discussion on this subject Mr. MacCracken invited all those who wished to see on a committee to go over the handbook and report on it at a later time. Some fifteen or twenty of whom were engineers, others the railroads, and with J. S. Newell as chairman, the committee left the meeting room and went into conference in Mr. MacCracken's private office.

The afternoon session was opened by a short address by Assistant Secretary of the Navy for Aeronautics, Edward P. Ware Jr. in which he told of the work being performed by the same division of the Bureau of Aeronautics. Emphasis is the matter of aircraft standards. Mr. Warner stated the importance of all these interested and properly equipped men to get in direct touch with the Society at its New York office.

The next topic that came up before the meeting was the advertising of a rule being added to the Air Commerce Regulations prohibiting passenger planes from operating from either than a fixed field. This suggestion was met with positively unanimous objection. Mr. Newland explained the problem with the fact that the majority of the aircraft which are now not built upon the standard which is now in effect are built upon a fixed field. In this opinion such a ruling could retard the development of aviation instead of aid it. Others maintained that fact that such a ruling could be much expensive to small independently companies, though companies and small operators are closely located to a fixed field. When also Mr. MacCracken pointed out that the ruling would not apply to contractors or exceptional cases, the delegates still continued to regard it as a very dangerous ruling.

The final proposal of the day's session that of prohibiting use of ear phones (ear phones) from engine room operation was voted down. With but one exception the delegates were absolutely against such a ruling. In the case of the exception the opinion was expressed that if these phones were taken out of a field and turned the outcome would be a lot better for a year time use.

It is in the state of the facts that they find the attack on the suggested ruling. So claim that in case against the ownership of an airplane should not be extended to engine room. In referring to the standard ear phones he said that they were originally for the use of ships along coastlines. However, he said that they are not used to which is a reason to think that they will never ever be used and that these phones would be perfectly unnecessary in our case. If the phones were able to pass the Department of Commerce's examinations he felt that it is in the interest of the service that they should be limited as to use.

Mr. Dan Atwater, director of the American Standard Association, also spoke of the Standard plane stand their rather than determine a C.I.F. insured passenger.

After good time, and many opportunities to introduce and that most had seen a use of "detrol" in the language of a Standard plane.

Stephanus J. L. de Groot, of the Ford Motor Co., stated that to propose such a ruling would be only an attempt but definitely opposed to present a new and fairer method of regulation. It was, in his opinion, quite possible that the enforcement of such a ruling would put many small and independent operators out of business for quite some time to come.

In expressing his opinion on the subject Mr. Director of the Atlantic Aircraft Corp. stated that such a ruling should never really effect. As far as the meeting to have there are only about 2500 aircraft and others that are part of that will be the end. Other opinions were expressed along the line that as a company grows so does the desire for modern equipment and that when such equipment



Robert R. Rumford, assistant of commerce



Edward P. Warner, assistant secretary of the Navy for aeronautics



George Chamberlain, member of the Second National Aeronautics Conference

serve a very good ground education lesson taking up related subjects. He also stated that out of 250 planes that he had sold between '26 and '27 per cent of these had been sold to new students who had solved with from 5 to 20 hours instruction, and that in this case he could check out any of the purchases and know kind of job it record to getting additional information. Mr. Chamberlain concurred in this view.

1. To take the Army course of 200 hours.
2. For the student to buy his own plane.

3. For the student to take the flying school course and then get a job with an air line.

M. H. Merrill of the Central Flying Service stated that a student could get additional experience by serving on in the Army Service, but the cost of this would be too high and must encumber the student. He suggested that the Department issue the standard of qualification for a private pilot's license. However, Mr. Merrill felt that nothing should be done to reference to regulating the schools for at least one year after this phase of the industry was under way, and that in all probability the schools would take care of their individual problems. In the matter of rating minimums, it is stated that he considers that the state tax on gasoline used by airplanes had been raised at this point the meeting was informed that the State of Florida was contemplating whether to use the tax funds for the improvement of its airports so as to make the tax compete altogether. There is the State of Maine where a state every month, according to a representative of that state, it is proposed that the State of Washington makes an increase of one cent of the two cent tax whereas the State of Illinois refunds two cents of the tax.

Mr. Gehrke speaking from the standpoint of a student made taking the training vital that he considered it to be a worthwhile undertaking for a prospective flying student to attend an automobile school or some sort of a ground school before taking instruction in the air, as that when that time came he would have some idea as to what was taking place while he was flying.

J. E. Brewster said that out of 740 applicants received by his school only three had been rejected as the result of a test flight. He went on to say that in some cases where a student is rejected and the man's money returned he goes elsewhere and learns to fly. He stated that in his school a man receives a total of a little over 15 hours. The average student goes solo after 8½ hours of instruction, he then goes solo for a short time and then receives about 4 hours additional instruction. He also stated that before a man goes solo he receives an extensive ground school training. In connection with prices charged to these students Mr. Brewster stated that in Japan it costs \$660.00 to learn to fly, in England it costs £1100.00 and that in Germany it cost \$2200.00 for about 15 hours time in the air.

C. D. Codd of the American Eagle Aircraft Co., of New York expressed the opinion that the last number of new

tens the better it would be for aviation, and made a plan that the industry be allowed to grow, by the Army, which being encouraged rather than discouraged by the plan of numerous rules and regulations.

The consensus of opinion is reference to aviation said, was that they may be allowed to develop themselves if it is another year before being put into any sort of regulation.

In commenting on the school situation in Canada Mr. Wilson said that since the war there had been a great surplus of pilots in that country and that it had not been necessary to have any more for the time being. Recently, however, the Canadian government had tried to encourage the training of pilots. According to Mr. Wilson the policy of the Canadian government is to keep primary training at the local aircraft schools, but while a pilot showed aptitude or had been definitely offered a job, if he reached further training the government gave him a course of about 60 hr. The government also offers a course to private school operators with the idea of showing them how to teach and also with the idea of encouraging a more uniform system of training. Mr. Wilson added that Canada has experts in encouraging the training of pilots through the formation of light plane clubs in which some of the material will be furnished by the government.

When the question of regulations governing flying license in the United States and Canada was brought up Mr. Wilson said that before long all planes would have to land at a designated part of safety, but for the time being pilots had no desire to receive the custom officials at their selected point of entry of their plan to land at that port. In reference to referring to this country Major Young explained that the same arrangement would be necessary.

Further in the conference the suggestion had been made that the state tax on gasoline used by airplanes had been raised at this point the meeting was informed that the State of Florida was contemplating whether to use the tax funds for the improvement of its airports so as to make the tax compete altogether. There is the State of Maine where a state every month, according to a representative of that state, it is proposed that the State of Washington makes an increase of one cent of the two cent tax whereas the State of Illinois refunds two cents of the tax.

As the attendance at the meetings had increased considerably and the matter recommended to the Department of Commerce name became somewhat limited it was announced at the close of the Wednesday meeting that the conference would continue in the future as the U. S. Chamber of Commerce.

The Thursday morning session, after being called to order by Mr. MacCracken, was turned over to Major Yerger who

said that the Department had prepared printed data on present regulations governing the rating of airports, a paper method of management and administration of use reports and suggested field rules. Copies were distributed and then Mr. White said that the report of the airport committee reported at the previous meeting at New York had been changed in the result of holding numerous small conferences to be held this committee would meet again in New York to discuss airport questions.

In a close up report of the second meeting William E. Anderson, chairman, said that the report was a compilation of the views of the members, for the most part, of the departmental experts connected with cities and communities, that the solution he arrived to give more specific information, that the Department's reliance from publishing such a field code suitable for 24 hour flying, that Weather Observatories cooperate so as to give better reports, and that a field manager be appointed to have full authority, no supervisor in the New York report of the committee.

Zoning of Airports Suggested

In opening the discussion on this subject Major Young reported as to the effect such a ruling would have on the small town which spent time and money and then when the zoning was thought found that it increased an rating at all.

In reply Mr. Anderson stated that it has been the intention of the field to know enough about airports at present to give advice. Surrounding ground might have a big effect on the rating of an airport in the near future. It might become necessary to zone the surrounding country according to Major Young and that it would be advisable to wait until that time.

A contrary view was expressed by Mr. Feltner of Detroit who expressed the belief of ratings were part of some automatic or possible field map which would include a road map, etc., which would get to the general field subject to review in the airport development case sheet.

H. S. of Houston also expressed disagreement of the committee's suggestion and said that his city had worked hard to obtain a suitable airport so that it could be rated by the Department as an early date.

Paul L. Foster of Cleveland & Smith brought out the point that it can wait until the city finds that it can't use the zoning would never be done. In his opinion it would be best to postpone in delay rating airports till air travel be developed.

Majority Favor Immediate Rating

Several other reasons for not delaying the rating of airports were presented and it became evident that the majority of the present felt that rating airports now would set an example in smaller cities and by laying down specific standards as to what was required for various rating a field would help local groups to get financial backing from the community officials. Such big cities that already have airports established deserved a recognized rating was also believed also, and as was pointed out by Mr. Johnson amount of flying will be done in and around small towns from 20,000 to 50,000 people and that it was these of the industry should encourage to build airports and start them with local groups of men to feel better they can do.

In concluding argument for immediate rating information was definitely forthcoming. Mr. French of New York said that the city of New Orleans had experienced its trouble and inconvenience in securing an airport to the satisfaction of its citizens as to just what was

required for a first class municipal airport. In his opinion the lack of administration in a community was a serious hindrance block as regards obtaining funds for the construction of an airport and he felt that the Department and members of the industry ought to observe cooperatively along that line. And not only this, but that pilots should patronize newly established airports wherever possible.

Just before the morning session was adjourned J. D. Alexander made the request that the commercial manufacturers present meet during the noon recess to discuss the forming of a manufacturers organization.

At that meeting S. S. Blodell of the Associated Chamber of Commerce of America explained the workings of that organization, and the value it would be to a commercial airplane manufacturers organization. Blodell said that the organization should work as an association to be formed within the Chamber. After some discussion as to whether "the manufacturers bureau" group should be formed within the Chamber or outside of it, a vote was taken. The majority were in favor of forming within the Chamber. A more complete account of this meeting appears elsewhere in this issue, where in this sense,

Due to a still greater increase in the number of introducing delegates the Thursday afternoon session was held in a bigger room in the same building. Major Young opened the session and explained the purpose of the airport data that had been distributed in the morning. The rating of airports, explained Major Young, would be based as three points, 1, general facilities and equipment, 2, flight flying equipment, 3, airport development case sheet. The rating of an airport, added Major Young, would be based on the three points. If the airport needed the services of one or all of the three points provided that the original rating was not the highest possible the rating would be decreased in proportion. The same rule applied in the event that the standard of any one of the three points became lower. Major Young said it clear that the highest rating possible was a standard of A for each of the three points. And that the rating X indicated that that particular point was not equal to the Department's highest rating. The rating scale will follow in order as stated at the meeting. Thus, if an airport had no night flying equipment whatever, but was of the high standard in the other two points, its rating would be AXX.

As regards rating airports in Canada Mr. Wilson explained that the matter of airports was not as developed as that same as in the United States, but that the Canadian Government almost all cities and communities to obtain as much as possible but suggested that little money be spent on airport equipment until such time as air travel warranted such expenditures. In other words, they advised that the facilities of an airport grow with its use.

Additional material was distributed by the Department as proposed resolution giving the rating of air transportation.



Charles E. (Clegg) Jones, Jr., of the Clegg Aeroplane & Motor Co., Inc., Gainesville, Ga., U.S.A.



Albert F. Brueckner

Brig. Gen. Benjamin D. Foulois

New Assistant Chief of Air Corps Has Had a Brilliant and Distinguished Career

By SPENCER CONNOLY

THIS FRIE-DAY night, upon publication of his appointment as assistant chief of the Air Corps, Brig. Gen. Benjamin D. Foulois, who had been commanding Chief Pilot, N. Y. A. F., will have opportunity to assume command of Air Corps with the rank of brigadier general immediately assumed. Just now, at the most brilliant and distinguished career in any other Army field.

Born at Wethersfield, Connecticut, on Dec. 8, 1875, he enlisted as a cavalry trooper, and served as an cavalry-mounted officer in the Spanish-American War while under legal age for enlistment. Having had a taste of soldiering he entered in the Regular Army at the close of the War and while serving as a non-commissioned officer against the Indians he was soon promoted a first Lieutenant of Infantry.

After attendance at the Army Signal School at Fort Monmouth in 1898, he served in Cuba with the Army of Occupation and in connection with this duty completed in 1900 an section of the Progressive Military Map of Cuba which brought him the recommendation of the War Department. In 1902 he operated the first dirigible, then in service in the U. S. Government and the following year he was selected to take part in the construction from the World Builders on the first plane owned by the U. S. Government. As observer on the first non-motorized flight made in America, this marked participation in the first non-motorized flight made in America. Then followed a record series of flights made in America. They reached record after record, reaching both the miles, the hours and altitude of six hundred feet, thus establishing their world records for distance, speed and altitude.

The year of 1911 saw him at San Antonio, Tex., where General Foulois became the first member of the signal corps to fly during the course of the year. This was the first time that a signal corps pilot ever flew over the frontier. He was promoted to captain in 1912 and to major in 1913. In 1914 he was promoted to colonel and became the first signal corps pilot ever to receive a promotion in the signal corps. The one hundred and fifty additional promotions in the service were the subsequent ones made in the year of 1915 for his achievements in the World War. In 1919 he was promoted to brigadier general and in 1920 to major general. He has been promoted to brigadier general in 1921 and to major general in 1922.

The next four years Foulois adopted routes to various countries, flying messages up to eighteen miles. In 1922, trailing the Yucatan Border, using a motor aviation plane he made a record breaking flight along the Rio Grande to the Rio Grande to Eagle Pass, Tex. In the summer of 1922 he visited the "Cris" or the "Red" Islands in the Caribbean National Committee at that time and turned the task of surveying by a hasty reconnaissance. In 1923 the Aviation Service of the Signal Corps had given to supporting programs and the General commanding the First Army supplied non-commissioned officers with surplus requirements of 200 sets, etc.

Aviators were beginning to be taken seriously when Gen. Foulois moved his command to him from Fort St. J. to their new station in San Antonio. The eight airplanes cost \$50,000.00. It's ships without wings or engine, \$20,000.00 each. The Flying Club joined the Motor Corps. Headquarters of the Motor Corps were established in March, 1924, office service personnel, surplus master for South America. In spite of enough equipment, aviation passed its worth in non-Air Corps service and General Foulois had a small import in military corps in regarding that during the operations in Mexico our surplus had been well consumed in getting to them.

After drawing up the plans of organization for the Air Service at the beginning of the World War and doing the appropriation bill, he and L. C. E. Tolson, the Chief of Air Service, organized the A.R.F. and with a small detail of aviators and enlisted men had the work for the A.R.F. Air Service. The Service entered the War in the month of April, 1917. Numerous squadrons and American pilots over the frontiers became the first American pilots ever to receive the Legion of Honor. He received the Legion of Honor in 1918. He was promoted to brigadier general in 1919 and to major general in 1920. In 1921 he was promoted to brigadier general and to major general in 1922. In 1923 he was promoted to brigadier general and to major general in 1924. In 1925 he was promoted to brigadier general and to major general in 1926. He received the Legion of Honor in 1927. He received the Legion of Honor in 1928.



BRIG. GEN. BENJAMIN D. FOULOIS

December 19, 1927

AVIATION

\$83,187,212 Direct Appropriations Are Indicated By 1928-29 Budget

The BUDGET Message of President Coolidge was presented to Congress on Dec. 3, together with the Budget for fiscal year ending June 30, 1929. Last year's Budget is first to make appropriations for the fiscal year past and this year's figures give the amounts allotted for each year. Referring to "Air Service," the President

A contract allowance on an additional \$10,000,000 over and above the \$10,000,000 increases the total for the Bureau to \$12,000,000.

The National Advisory Committee for Aviation and the Accounting Branch of the Department of Commerce have slight increases, the \$4,000,000 additional allowance for the Contract Air Mail route indicates the volume of mail that it is expected will be sent in the year commencing next June.

Harvard Takes the Air



Sixty registered pilots are gathered among the members of the Flying Club of Harvard University, Cambridge, Mass. Left to right: C. Stone, E. Wood, William H. Lamp, general, A. C. Pohl, M. S. Farnham, E. A. Agard and F. J. Koenig.

Canadian Air Mail Company Will Use Fairchild Cabin Monoplanes

SOON AFTER its organization, the Canadian Trans-Continental Airway, Ltd., at Quebec, Canada, ordered the first air mail contract from the Canadian Government.

The service is between Montreal, trans-Atlantic, thru the mouth of the St. Lawrence River and various Canadian cities. The present difficulties are around service and therefore the planes must land on water and not on land or water. The problem was solved by the company equipped with monoplanes in which they can float. Both the planes and monoplanes are being constructed by the Fairchild Aircraft Manufacturing Corp. of Farmingdale, L. I., N. Y. The planes will be used to carry passengers powered with Pratt & Whitney "Wasp" engines.

Griss Aero Struts Approved By Department of Commerce

GRISSE AERO struts have been approved by the Army and Navy Boards of the Department of Commerce for use on seaplanes and airships. These serve as shock absorbers depend upon a combination of pneumatic and hydraulic pressure for their action and are now being used by several present aircraft manufacturers, including the B. T. Mahoney Aircraft Corp. of San Diego.

A contract allowance of \$10,000,000 for the Air Corps, and \$10,000,000 for the Bureau of Aeronautics increases the total to \$20,000,000.

An increase of \$21,200,000 in the Air Corps, and \$10,000,000 for the Bureau of Aeronautics increases the total to \$31,200,000.

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Front and side view of the Allison V-1410

By S. H. GILMAN

(With 3 pictures: Allison Engineering Co.)

THIS FRIENDLY looking engine, which seems perfectly at home in the cockpit of a modern day development in the field of aircraft engines, was originally designed by the Engineering Division of the Army Air Corps at McCook Field, when more than four years ago, it succeeded the glibc of air cooling the Liberty engine. Preliminary designs and calculations were made, and a proposal for bids was issued, calling for the design and construction of an experimental engine. The Allison Engineering Company was selected to carry out this project.

The first engine, designed and built for Wright aeronautics, was so successful that the Air Corps was encouraged to continue its development. It was decided however, that because of better stability, the engine should be designed to run in the inverted position. A further advantage of the inverted type is that even with short air cooled exhaust stacks, which minimize fire hazard, the gross and net air of the engine are directed away from the cockpit.

During the past two and one half years, inverted air cooled Liberty engines, both direct drive and with propeller reduction gears, have been constantly under test in the Air Corps planes and laboratories, and on the test blocks of the Allison Engineering Co.

The design features evolved from those of the basic engine, with the performance characteristics comparable with that of any aircraft engine.

The installed weight of the inverted air cooled Liberty power plant is considerably less than that of the water cooled although slightly greater than that of an air cooled radial engine of the same power.

Although it was necessary to reduce the basic, in principle, room for the cooling fins, yet the air cooled engine develops

The Air Cooled Liberty Engine

V-1410 Developed by the Allison Engineering Co. With the Army Air Corps

more power than the standard Liberty. The improvements result from the use of a rotary induction system, an enclosed and longer intake air piping, a better cooled cylinder port, and higher R.P.M. which is permissible because of the non-expanding parts.

The V-1410 engine is particularly well suited to aircraft use, since with a maximum amount of cooling, a maximum air flow is derived on all surfaces of the cylinder barrel and heads. In fact, the engine itself might be said to be in constant cooling. A single sheet of aluminum arched across the open part of the Vee, together with a back plate of aluminum forms a deep base, which receives air from the intake at the propeller, and distributes it between the cylinders. At the intake area of the cooling is some 20 per cent greater than the area of the outlet passage, sufficient pressure being built up to force the air to flow out at high velocity from the intake, barrel, base, and valve ports, which causes adequate cooling of these parts. The cooling air freely passes through the ports in the side of the气流 cooling and anti-vibration pads.

The design of the engine follows generally that of the standard Liberty, the engine cylinders and crankshaft being used, as well as the lower gear, connecting rod, main bearing, gear, propeller hub, propeller back and lower. The oil sump, camshaft and balance valves, springs and valve arms are of new design. A larger oil pump is used, and oil return pumps are employed to overcome the resistance

of straight intake manifolds and single carburetor.

The crankcase bearings are made quite large and deep to accommodate the space which the valve stems and springs take up. To do this more through utilization of the valve seats, but as the straight valve ports of large diameter are made and partially filled with a flexible seat, the section of which extends from the valve head to the seat where it is recessed, the seat thereby forms an integral part of the cooling system.

The cylinder head is machined from a solid casting of the best grade of aluminum alloy, and is secured to the engine by twelve large bolts, four on the left and eight on the right.

The cylinder head is machined from a solid casting of the best grade of aluminum alloy, and is secured to the engine by twelve large bolts, four on the left and eight on the right.

The valve seats and spark plug covers are of tungsten carbide.

The cylinder heads, with their integral cooling fins, are cast aluminum (Y Alloy), and are heat treated before machining. They are machined to receive the threaded seal of the cylinder barrel and the valve stem covers, drilled and reamed for the valve stem guides, and are tapped for fitting the spark plug covers; the bore and threads in the heads being somewhat smaller than the outer diameter and threads of the parts fitted over them. To assemble the various parts it is necessary to heat the cylinder head to a temperature of approximately 650° F., the other parts being at room temperature.

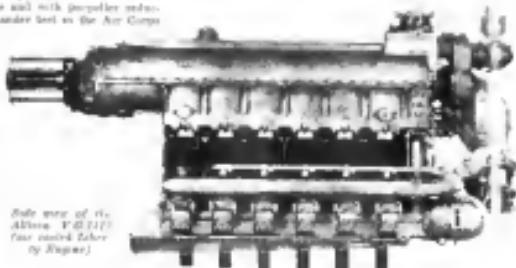
When the cylinder head is cooled, the component parts of the assembly are held together under considerable tension. This method of assembly makes care of good heat flow through the joints and although the cylinder assembly, in operation, will be worked at a fairly high temperature, the difference in temperature of the various parts will never be great enough to allow their loosening.

After the cylinder assembly has been made up as above, it is subjected to a hydrostatic test of 500 lb., after which the valve seats are finished and the cylinder heads ground to size.

The non-expanding (high speed) type of rotary induction is used on the air cooled Liberty. By its use a single carburetor can be employed to supply all twelve cylinders. Furthermore, the high speed of the impeller effects such thorough mixing and atomization that all cylinders receive a uniform mixture, although the unequal form of intake manifolds are used.

A valuable characteristic of the non-expanding fan is that both capacity and pressure increase more rapidly than the speed, and so the action of changing mixture with the speed, common to the natural disease of volumetric efficiency which would result if the intake depended on mixture ratio. Thus at 3500 rpm. on wide open throttle the pressure in the manifold is approximately 1½ in. of mercury above atmosphere, and at 1800 rpm. is 2½ in.

The entire rotary induction assembly is built up as a unit, and mounted on the left end of the Liberty crankcase, being



Side view of the Allison V-1410
air cooled Liberty engine



Front view of the Allison V-1410 and P-2420 engine

The cylinder barrel project approximately seven inches, and the cylinder head is machined from an adequate casting which collects all of the heat of the crankshaft bearings, that separate off the cylinder walls, and the discharge from the cylinder scavenging passage. A double scavenging pump, on top of the cylinder pins, collects the oil from both ends of the scavenging pipe, and forces it through the jackets on the carburetor and carburetor elbow, and returns to the supply tank.

Each cylinder has the scavenging pump in the piston pin, which generates a pressure of 100 lb. per sq. in. in the crankshaft bearings. A somewhat lower pressure is used in the crankshaft bearings.

Motors used in the various parts of the cylinder assembly were selected as best suited for the particular work each part is subjected to. The barrels with their integral cooling fins and hold down flanges are machined from tempered steel forgings. On the head end is machined a twelve pitch thread, six and one half inches long for attaching to the cylinder



Side view of a Curtiss pursuit plane equipped with an Allison V-1410 engine

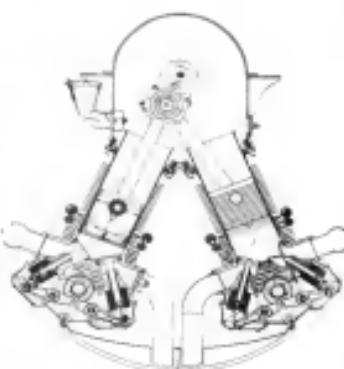
Fig. 14. (Left) Frontal view of the Allison V-1710 engine showing its intake and exhaust ports. These two ports are positioned to provide air to the carburetor through a venturi tube which is a private feature of both the V-1710 and V-1710B engines. (Right) A front view of the cylinder assembly of the Allison V-1710.



Front view of the Allison V-1710 engine. Note intake and exhaust ports.

with no outer bearing at #2 as is provided with a solid forged disc of aluminum. The struts are drawn from the carburetor to the center of the cylinder, but instead of drawing directly into the top which would cause vibration, the tie rod is bent so that it is deflected to the right and left in the direction of the propeller rotation to eliminate caused blades from hitting the carburetor by the top of the cylinder. The outer casting at hub location, from the top of the cylinder, is deflected through a narrow annular space to the different chamber, and then through a Y fitting to the intake manifold connecting the right and left banks of cylinders. On the back face of the intake manifolds housing is a standard slotted mounting flange—the flange from the cylinder to the cylinder being through mounting each other.

The propeller reduction gear case used in the Model V-1710



Cross section drawing of the Allison V-1710 and V-1710B engines.

Cooling System. An air-cooled system is used. The basic cooling system consists of a 400 cu. ft. per min. blower, a 10 cu. ft. per min. water pump, a 140 cu. ft. per min. fan, and a 140 cu. ft. per min. compressor.

Final Propeller Displacement. 1410 cu. ft. per min. at 1,000 rpm.

Max. Propeller rpm. 1800. **VG-1710** 1800. **VG-1710B** 1800.

Horsepower. 1400 at 1800, 430 at 1900.

Blip. 128 lb./sq. in. at 1800, 1900 at 1900.

Max. Gas Consumption. 35 lb. per hp. per hr.

Max. Oil Consumption. 60 lb. per hp. per hr.

Carburetor. Standardized Type No. 982.

Ignition. Delco Remy 22 Volt Heavy

Wright.

V-1710. 1825 lb. **VG-1710** 2100 lb.
These weights include generator, propeller hub, exhaust stacks and cowling, but not the starter.

Length. V-1710 75% in. L VD-1710 80% in.

Height over cooling fins. Front 48% in. Rear 44% in.

Width. 46% in. **VG-1710** 51% in.

Height above engine belt. 10% in. **VG-1710** 17% in.
Center to center engine height.



The Allison V-1710 and VD-1710 engine cylinder assembly.

1400 in the Allison Kerosene type and is fitted with a spring coupling which effectively prevents breakage and prevents wear of the gear teeth. The reduction ratio is 5/3. Propeller rotation, same as clockwise. The use of this gear requires a special clockwise and counter-clockwise.

Specifications

Model	V-1710 and VG-1710	VD-1710
Arrangement	—	Inverted V-12 deg.

Airplane Booking Service Formed With Main Offices in Kansas City

AN AIRPLANE booking service was recently organized in Kansas City, Mo., under the name of Aerius. The service began on Dec. 1 to coordinate the travel and air service operators by selling tickets to the airlines in such cities as Chicago, Detroit, St. Louis, Kansas City, Wichita, Tulsa, Oklahoma City, Amarillo, Texas, Lubbock, New Mexico, El Paso, Tucson, Phoenix, San Francisco, Los Angeles, Sacramento, San Jose, Oakland, San Francisco, Seattle, Portland, and Anchorage, Alaska. Aerius cooperates with bus companies and bus lines to provide quick transportation to and from airports. It also arranges for carmen connecting affiliated airplanes, intercity passenger lines and night service trains. Its slogan is "By Air Anywhere." The agents of Aerius are located in leading hotels, clubs and other public places.

Commercial Plane Manufacturers Discuss Idea of Forming Group

DETROIT, Dec. 19.—Interest now exists in a different organization in the commercial airplane manufacturing field, with the joint consideration of the industry at organizing a group on their plane manufacturers.

The group, Committee composed of J. D. Alexander, W. H. Deppe, W. M. Laird and Thomas Thompson, will be conferring with representatives of the American



J. D. Alexander

Chamber of Commerce of the United States, in addition to members of the Chamber of Commerce of the State of Michigan, will be meeting to discuss the formation of a "Working Committee" or "Group" of commercial airplane manufacturers. The purpose of the "Working Committee" is to facilitate the building of consensus of the members of the group in a white paper of the United States or the call of a Chamber or other designated members. This enabling the Commercial Manufacturers to voice the advantages of cooperative consideration of their special problems for the best interests of the group and the industry as a whole. Also securing the additional advantage of the comparative work of the entire membership of the Chamber in the activities of the home office, supplemented in the work of all other permanent committees.

The various companies in which considerations are given in the affairs of the manufacturers of commercial airplanes in Detroit and effect a plan that would enable them to come together as a group for consultation at their special problems and at the same time to set up their own opportunities to cooperate in the work of presenting all in related interests.

The question resolved itself into consideration of two plans: (1) The organization of an independent trade group; (2) Each company retaining membership in the Chamber with a view to strengthen that association and at the same time providing for the establishment thereunder of a special agency representative to manufacturers of commercial airplanes. This group to become permanently established within the Chamber, selecting a "Working Committee" or "Group" of members of the Chamber thereof to voice the group's interest in the "Working Committee" or members of the group in a white paper of the United States or the call of a Chamber or other designated members.

Following the discussion of the general views of the commercial airplane manufacturers, Alexander, Laird, Thompson and Deppe were called to a table in Room A of the Chamber of Commerce of the United States, where a white paper was presented. This meeting was attended by 1200 members of the Chamber.

After deliberation and free discussion, the Chamber passed a vote to determine which of these plans should be followed. A vote was taken. The motion was made that a single organization, not the industry or a group of it, shall be separate membership in the Chamber and in choosing thereunder a group composed of the commercial manufacturers to consider and solve the peculiar problems of this class of the industry and to cooperate with similar groups at the Chamber representing the other aspects of the trade.

The Chamber then voted upon the representation of the several companies to generate the class of membership which each company wished to require, with the following result: Alexander Aircraft Co. (A), Stelco Aeroplane Co. (B), Hamilton Metal Aeroplane Co. (C), American Eagle Aeroplane Co. (D), Proctor Aeroplane Co. (E), Overhead Manufacturing Co. (F), United States Corp. (G), Leland Aeroplane Co. (H), Curtis Wright Co. (I), Lear Aircraft Co. (J), Atlantic Aircraft Corp. (K), Phoenix Aircraft Co. (L), Advance Aircraft Corp. (M), Leichner Engineering Co. (N), Leichner Aeroplane and Supply Co. (O).

Concern Buys a Ryan Plane

To Demonstrate its Product

THE CLEVELAND Pneumatic Tool Co. recently took delivery of the Midway Aircraft Corp. 8000 plane, built of a Boeing 5 plane chassis, for E. F. Wulfson, engineer of the company, and E. F. Chevalier, his pilot, from San Diego to the Fairies at Cleveland, O.

This plane is to be used for engineering and demonstrating the new Aerostatic Aeroplane Flying Boat which is being marketed by the Automatic Division of the Cleveland Pneumatic Tool Company.

The plane is now in northern territory, doing demonstrations and test work in conjunction with showing various pilots the action of the Aerostatic in landing landings and in take-off descents participated in by representatives of



Front-quarter view of the de Havilland "Tiger Moth".

The D.H. "Tiger Moth"

British Experimental Monoplane Flies 186.5 M.P.H. at an Altitude of 20,000 Ft. and Lands at 60 M.P.H.

THESE HAS been considerable interest shown in the past six months in the de Havilland "Tiger Moth," built by the de Havilland Aircraft Co., Ltd., Hatfield Aerodrome, Edgware, England. This plane has been credited with 186.5 m.p.h. and an altitude of 20,000 ft. It is 17 ft. long. However, it did not reach the ceiling which is thought to be 20,000 ft. It has been powered with both a 300 h.p. Gnome engine and a 180 h.p. Gnome-Motors G.M. engine.

The Tiger Moth is essentially a flying plane, being very similar to both the Supermarine S.5 and Martin M-27. Below are typical contours.

The plane is an experimental low-wing monoplane with the wing braced by wires. The engine which has the cylinders in line is fitted right back to the tail with rods or brackets, the landing for the pilot's head. The wind-shield is on top, and is a part of the fuselage. The first Tiger Moth was built with a four cylinder air cooled Gnome engine which was later replaced with a special engine designed by Miss F. D. Halford and Captain de Havilland.

The Tiger Moth has ample possible upper clearance with very high wings at a considerable cost. It is so much concentrated into a singleplane and gives a very creditable performance. In addition to being very useful for research work the plane is an excellent racing machine and can also be used for small engine development. It was originally planned that two of these planes were to be entered in the King's Cup Race held this year in England. The first plane was fitted with a Gnome engine which was later replaced by a special engine engine described by Miss F. D. Halford and Captain de Havilland. The de Havilland engine developed 180 h.p. though it rated at only 30 h.p. It has landing gear on the bottom of the fuselage eliminating an oil radiator. A detailed description of the Gnome engine will appear in an early issue of *Aero-News*.

Unfortunately the second plane fitted with a Gnome engine was not completed in time and only the DH.201 engine plane

surprised in the race. Capt. H. R. Broad, A.F.C., set up a world's speed record of 350.47 m.p.h. in the DH.201. The Tiger Moth on Aug. 26 of this year, took down into a racing plane, plane to climb to an altitude of 20,000 ft. It is 17 ft. long. However, it did not reach the ceiling which is thought to be 20,000 ft.

The de Havilland Tiger Moth in some ways more closely resembles the Blackburne "Tom-Tit" engine, 180 h.p. as horsepower. Essentially the framing of the engine and the pilot and also the method of housing the wings differs from the DH.201. The landing gear on the de Havilland



The "Tiger Moth" in flight with Captain Broad at 186.5 m.p.h.

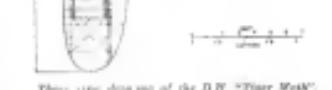
gear Moth is wire braced. The construction of the de Havilland Tiger Moth consists with standard de Havilland practice. It has a plywood covered fuselage very similar to it on the well known DH.201 and Moth. The fuselage is made in two sections so that it is easier to fit the tail on the bottom. It has been said that the cross section almost coincides with the form of a man with his legs stretched out in fronting for the engine extends back over his head. The form of the fuselage has been rounded out to complete the rounded shape. As the fuselage is only 17 ft. wide the cockpit and part of the framing is housed so that the pilot sits just and easily. The engine has the transmission as placed but the frontal area is reduced to a minimum so that it may easily crawl to offer a minimum of resistance. The cockpit is over 20 ft. ahead accommodates an average sized man. The

tail undercarriage is housed by two struts in addition to two mainwheels with fairings on the side of each wheel to the rear spar, and another wire between the wheels. The shock absorber arm of the tailfin and type and mounted within the wheel. The arrangement is very simple and reduces the parts to minimum considerably. Of course, it would be admitted that the plane is quite light and that a large shock absorber is not necessary.

The Tiger Moth has a landing speed of 60 m.p.h. which is quite slow for a plane of this type. It is stated by the same factor that when considering wing area it was decided that it would be best policy to obtain a high top speed at the expense of an abnormally high landing speed as has been often done in the past by the designers of racing planes. The fuselage is constructed of two laminations of spruce half on a jig and glued and screwed to the longerons.

The general specifications of the de Havilland Tiger Moth are as follows:

Span	36 ft. 8 in.
Length	24 ft. 7 in.
Wing area	300 sq. ft.
Altitude area	300 sq. ft.
Stabilizer area	2.5 sq. ft.
Diameter area	7.44 sq. ft.
Fin area	2.2 sq. ft.
Tailfin area	4.6 sq. ft.
Wing load	10.66 lb. per sq. ft.
Gauge (1900 mil)	1.04 in.
Oil (12 gal.)	26 lb.
Pilot (Capt. Broad)	143 lb.
Total disposable load	287 lb.
Gross wt. loaded	895 lb.
Wing loading	11.83 lb. per sq. ft.
Power loading	.696 lb. per h.p.
High speed over 100 hrs. motor	184.45 m.p.h.
Landing speed	60 m.p.h.
Highest altitude	20,000 ft.
Estimated ceiling	25,000 to 34,000 ft.



Front view drawing of the D.H. "Tiger Moth".

is twined with ribbed webbing above the upper longitudinal. The wings is very good considering that the pilot is almost entirely enclosed. As there is only a small space available in the cockpit the controls are quite original. They operate in the usual manner by a stick and pedal. The stick is attached to a crank which through a mechanism actuates the ailerons by a torque.

The wings, which are loaded up to 11.83 lb. per sq. ft. are set into the bottom of the fuselage and braced with wires to the top of the fuselage and the landing gear. The wings are of conventional construction with 1 section upper spar and conventional ribs. The wings are built in two panels, the spaces forming a butt joint at the center line of the fuselage. The span of spans, pass through holes in the sides

Two Laird Commercial Biplanes Completed for Dept. of Commerce

THE E. M. Laird Aircraft Corp., of Chicago, Ill., recently completed two Laird Commercial biplanes powered with Wright Whirlwind engines for the Department of Commerce. The first was for Robert Frost and the second for Charles M. Young, director of procurement of the Department of Commerce. The E. M. Laird Aircraft Corp., is planning two new & improved Whirlwind models, a planing two-seat & open cockpit plane for Henry C. Eaton of Chicago, and the other a two place closed cabin type for Gen. T. Hartley, also of Chicago. The planes will have a tabular diamond frame and control wings as in the standard version on all E. M. Laird planes. The E. M. Laird Aircraft Corp. is also building a number of three place open cockpit planes for private owners and operators.

B. W. de Guichard is Named New Head of the AC Spark Plug Co.

B. W. de Guichard has been named president and general manager of the AC Spark Plug Co., at Flint, Mich., according to an announcement by Alfred P. Slavin, Jr., president of General Motors Corp., at which the AC Company is a subsidiary. At the same time, the appointment of Al H. Bissell as vice-president general manager was made.

Mr. de Guichard will be vice-president and general manager of the AC company, succeeds the late Alfred Chapman who died recently in Paris while on a business trip abroad.



B. W. de Guichard, newly appointed president of the AC Spark Plug Co.

In September 1932, Mr. de Guichard joined the AC Spark Plug Co. at Flint with Alfred Chapman, at which time the AC business was started. Parsons were opened in France and England, while the Flint business over 25 years at least. During this time plant and development costs a period of \$3,000,000. Mr. de Guichard was advanced to vice-president and executive general manager and in 1932 was elevated to the position of vice-president and general manager.

Mr. Coffey, the late vice-president and executive general manager is a native of Michigan. He was born in Endicott, N.Y. in 1893, and was educated from the High school there before entering the Fermi Institute where he specialized in engineering studies.

On Feb. 1, 1933, he came to Flint, becoming associated with the AC Spark Plug Co. in the accounting department. The following year he was elevated to the position of managing director and engaged the direction of the buying department especially in the automotive industry. On May 24, 1933, he was made executive general manager of the AC Company.

Pilots Using Boston Airport Should Keep Clear of Beacons

ALTHOUGH flying over Boston Airport has been prohibited by the Hydrographic Office, Washington, D.C. that there are flashing type boundary beacons placed just off each side of the end of all runways. These beacons stand about seven feet high, are painted white but will have six inch orange stripes painted on them shortly. These beacons will warn an airplane if it strays while plane is in flight.

Swallow Airplane Mfg Co., Bought By Wichita Group for \$125,000

A. SWALLOW aircraft from the Swallow Aeroplane Manufacturing Co., at Wichita, Kan., have, states that the company's factory and flying field has been purchased by a group of Wichita men — and it is stated that the purchase price is approximately \$125,000.

The change in ownership of the factory followed a series of three and a half months during which time the company was managed by the present owner, George E. Bissell. The company later took action against Mr. Bissell. At 12 when it left the company under a profit of \$11,400, including the value before it was \$13,217, despite the equipment utilized.

Following the sale of the Swallow factory, Mr. Bissell is reported that all banknote creditors will receive 100 cents on the dollar.

President Not Yet Named

The new owners, who took charge immediately, will now govern the corporation under the same name, it was stated. No additional news is given as to whom the new purchasers being considered for president.

For the next two months Mr. Bissell will remain as manager. Under his supervision the factory has been selling more than \$10,000 a week for the past two months, it was said. M. D. Bartholomew will continue as general supervisor and Mrs. Kathleen Kelly is to be retained as office manager. While Stevens will remain as chief engineer with 22 engineers already assigned to planes for the coming year, it was stated that first in building Aeroplane Model C, all other 1934 craft except half airplane, will be built of balsa wood in its body. It is also stated that the company is producing three planes a week, and is a dozen to one month behind on orders.

Missouri Concern Issues a 200 Page Aeronautical Supply Catalog

A NEW 200 page aeronautical supply catalog has been issued by the Nichols Brothers Aeroplane Co., Inc., of Marshall, Mo. It is a catalog which is stated to be unique in that no item is ever taken away from the catalog until the last lists the manufacturers of all of the commercial aircraft, a claim in general and the Nichols Brothers Co. in particular.

The Nichols Brothers Co. is stated to be the largest airplane supplier in the world and is selling airplane parts, supplies and components to practically every commercial manufacturer in the United States. With its to hundreds of branches in forty-eight states and Canada.

This new 200 page catalog can be had free from dealers and agents or by mail. A copy of parts and accessories, an engine compartment, radio, lights, motors, propellers, hydraulic, parachutes and loadsheets of other parts. In all there are 1000 sections, a complete parts price list for the Curtiss O-29 and OX-11 engines, the Hispano-Suiza, the P.V.A. Gouland and Standard airplanes, for Boeing, DeHavilland, and Handley Page, for Beech, Douglas and other marques and hundreds of other parts.

The catalog contains complete descriptions of Hispano-Suiza engines, described and lists with one production in excess as Wright Whirlwind, Detroit Air-Cat, Fairchild, Curtiss, Kinner, Ryan, Stinson, etc. In addition there is a section devoted to general information such as properties of SAE steel, annealed heat treatments for various steels, screws and rivets, scales and much additional data.

Imperial Airways Shows First Profit Since Its Organization

FOR THE first time since it was organized the Imperial Airways, operating a passenger air service between London and Paris, Cologne, and other European capitals, is to be reckoned as a profit. The loss it was soon organized to come up with a subsidy from the British government and report states that during the year ending March 31, the company made a profit of \$11,400, including the \$1,000 the company showed a deficit at \$10,400, including the year before it was \$13,217, despite the enormous subsidy.

The year report shows also that £1,000 has been written off the cost of starting lines, which was £50,000. It also shows that the value of aircraft, engines and equipment for the year from \$15,345 to \$25,054. The company's totalized net capital is given as \$274,500.

Since Jan. 1, 1922, the report says, the company has carried 50,000 passengers without accident to any one and flown nearly 21,000,000 m. The traffic of the European streams during the year increased 25 per cent, while operation costs decreased 25 per cent.

Watch Your Step



The above photo is a German paratrooper jumping from a glider hauled by the rear of a Fiat Bimotor, Germany, and last to do so successfully before he was able to "split" his glider and get home again.

REVIEWS

MODERN AIRCRAFT. by Major Vivian W. Page, Air Corps, U.S.A., is much more of a book than the average aviation book of today in that it is not merely descriptive of modern aircraft, but gives a clear and lucid account of the theory and mechanics of design with considerable thoroughness. To cover such a wide range of subjects in single volume is a difficult matter but Major Page has selected his material very well and has put it on concise and intelligible form.

There are twenty chapters in the book and over 800 pages of text and illustrations. Except for the historical section, classification of modern planes and engines is used, and frequent use is made of line drawings and diagrams to illustrate planes or aerodynamic principles. The first chapters deal with the general aspects of both bi- and triplane aircraft and the history of aircraft development. Several chapters are devoted to monoplane design and the usual construction of wings and fuselages. Details of construction and of maintenance are given also and the latest trends in design are indicated. Four chapters are devoted to airplane engines and propellers. There follow several chapters on the practical maintenance and use of aircraft and there are further chapters giving descriptions of typical personal gear, aircraft and navigation.

For those who know a good deal about aerodynamics the book would be very useful for reference in those matters, in which they have not specialized, as in which they wish to refresh their memories as they bring up to date. For those who are entering the field the book is a real encyclopedic and extremely worth while studying with the greatest care for it is clearly up to date and presents in simple language practically every phase of modern aeronautics. The book is published by the Norman W. Henley Publishing Co. of New York. The price is \$5.00.

Contract Signed for Lighting of Section of Atlanta-N. Y. Airway

A CONTRACT has been signed by Wallace E. Arthur & Co., Inc., for the lighting of the Birmingham to Greenbaum section of the Atlanta-New York airway route. Sixty-four sodium 247 lamps are to be installed on towers ranging from 52 ft. to 70 ft. in height.

Six incandescent lamps are to be lighted with boundary and obstruction lights and most of the fields are to be cleared and graded as well. Work, which has been started on the route, will be completed by Feb. 15, 1934.

Von Hoffmann Aircraft Appointed Alexander Eaglerock Distributor

VON HOFFMANN Aircraft Co. of St. Louis, Mo., is now the Alexander Eaglerock distributor for a territory covering eastern and southern Missouri and the state of Illinois, south of Springfield. As was announced in the Oct. 27 issue of *Aerogram*, the Von Hoffmann Company is also the Missouri distributor for B. F. Mahoney aircraft.

Lindbergh Starts Washington, D. C. To Mexico City Non-Stop Flight

AIR AVIATOR goes in press. Col. Charles A. Lindbergh, aviator in famous flight across the "Desert of St. Louis," is passing over the state of Texas on route now to Mexico City from Bellmead Field, Waco, Tex. The trans Atlantic race took off from the Army field at 12:30 P.M. on Dec. 11, and the last report has him to had been sighted at 9:30 A.M. Dec. 14 as he passed over Houston, Tex.

The take off, aside the New York to Paris start, was well received by only a few people. But on the other hand, word to his great flight beat Mrs. Caldecott Lindbergh took but



The Spirit of St. Louis in flight.*

hastily landed plane off the man-made surface at Bellmead Field in a showing of expert piloting shall suffice a date and Army men alike believed that today was unpredictable.

Word that the colonel would start the 2,660 mi. flight came rather unexpectedly as at the time a low hanging cloud masked the surrounding country and most men had left Bellmead Field in a wavy condition. However, shortly after about twelve o'clock in the morning the low-lying cloud to a selected few that he was preparing to start. A study of the Weather Bureau's morning report seemed to have satisfied him as to conditions that he would encounter en route.

As soon as he arrived at the field he made a final inspection of the Spirit of St. Louis which was checked out of its hangar and fueled, according to reports, with 200 gal. of gasoline and 15 gal. of oil. The plane's total weight was stated as being 4,700 lb.

Bids Good Bye to Major Barwell

Presently Colonel Lindbergh donned his sun glasses flying suit, passed for photographs, and good bye to Major Barwell, commandant of Bellmead Field, and then climbed into his plane. A few minutes later the Wright Whirlwind engine was started and given a short test run.

Then finally the pilot waved the chocks away, taxied onto position and started down the field. Said he from firm ground, from which the start was made the plane swayed from side to side as the wheels hit rate and soft spots. To the small group of spectators it seemed as though the plane could never leave the ground. And when at last space could be made beneath the wheels a burst was heard that the pilot would be unable to clear the trees on the far side of the field. But he managed to clear the trees on the far side of the field. But with shuddered maneuvering the New York to Paris line lifted

the Spirit of St. Louis clear of the tree tops, then cut left the bushes before heading in a southerly direction, followed by an escort of four Army, three Navy, and one Department of Commerce plane that stayed with him for the first 50 mi. of his 2,660 mi. air journey.

Report on Distribution of Load In Biplane Published by N.A.C.A.

THIS NATIONAL Advisory Committee for Aeronautics recently published Technical Note No. 289, entitled "Distribution of Loads Between the Wings of a Biplane Using Dragons" by Richard M. Madi, mechanical editor of *Aviation*. The report deals with the experimental results obtained in the wind tunnel by the author. It also deals with the information obtained by the adoption of the technique developed by the two German aerodynamicists, Faehnrich and Hopf. In order to prevent any error the tests were repeated using two different methods. The experimental results obtained in the wind tunnel of the Danish Government Board of Aeronautics at New York City. Tables are given and curves plotted showing the effect of one wing upon the other as well as the distribution of lift between the wings on a biplane model.

Copies of this report may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

Philadelphia Firm Begins Work On Hangar for Keystone Company

THIS AIRPORT Equipment Division of the Maryland Steel Corp., 110 Philadelphia Bldg., Philadelphia, Pa., has just begun construction of a large hangar for the Keystone Aircraft Co., Bristol, Pa. This hangar is to house all of the assembly building for the large bombers for the U. S. Army for which the Keystone Company recently secured the order.

In addition the Maryland Company, through its Airport Division has just completed in the vicinity the Philadelphia Municipal Airport, which is leased and operated by the Lehigh Valley Flying Service, Inc. The second large hangar on the field 72 x 80 ft. has just been completed in approximately 15 days after erection was started. The Lehigh Valley Company has just awarded another contract for the enlargement of their experimental shop, covering machine and engine repair equip-

To Discuss Promotion of Gliding Clubs at Dinner Given on Liner

ON DEC. 29 a dinner will be given on board the North Sea Lloyd 8 x 8 Columbus of New York for the purpose of discussing plans for the promotion of gliding in the United States. The organizers of the dinner are A. E. Parker, Hershey Club, New York, C. E. Freisch of the North German Lloyd, and Dr. Gottwald. Prominent guests have been invited and these will be utilized to further the work by gliders in Germany where over 3,000 students have been trained. Two moving picture films will be shown and a panel discussion will be given for the furtherance of the movement in the United States. It is the plan of the organizers to import a glider and to obtain the services of a general glider pilot.

FOREIGN AERONAUTICAL NEWS NOTES

By Special Arrangement with the Automobile and Transportation Divisions,
Bureau of Foreign and Domestic Commerce

Philippine Company To Organize

International aviation in the Philippine Islands is planned by the Philippine Airways, Inc., which recently filed incorporation papers, with the Bureau of Commerce and Industry. Organization to be undertaken by the new corporation are as follows: To conduct a school for training pilots, maintain an airtline passenger, mail, express and freight service throughout the Philippine Islands; engage in aerial photography, aerial surveys, exhibition flights; build airports and airfields of all classes; make airplane repairs, inspect and sell airplanes, airmen and all equipment or apparatus pertaining thereto, and engage in any other undertaking connected with aviation in the Philippines and generally to do all such other things and to interest all business as may be desirable in industry, industrial, commercial or otherwise in the attainment of the above objects as may of these respectively.

Recent Plus Sixplane Post

A company has been formed in Berlin for the establishment of a seaplane airport on the Unter Wasser, opposite Brandenburg. The present site of this port will be the village of Briesen, which is situated in the Free State of Brandenburg.

The new organization is called the Unter Wasser Seaplane Port Company, and it has the following participants: the German Government, the States of Oberschlesien, Preussia and Brandenburg, the lower West part of Westphalia, Bremen, Hanover, and the associated stateship of Hamburg.

The idea of constructing a seaport for seaplanes, as the Lower Water district from the year 1925, when private interests founded by the Lower Water Air Service Company, made trial trips with seaplanes between Briesen and the Island of Hiddensee.

Proposed Brazilian Aviation School

This has been introduced in the Senate of the Brazilian State of Minas Gerais a bill to establish a State Aviation School.

The bill provides for its establishment in the city of Belo Horizonte and that it is to be under the direction of the Board of Public Safety. The bill sets for a maximum expenditure of about \$90,000 which sum is to be used for the purchase of property, buildings and machines.

Air Survey of Rhodesia

The African Operating Company's survey expedition, now in southern Rhodesia, Africa, is making an air survey of the 100 miles of the Zambezi River. The work will be done photographically, using seaplanes operating from the river. The photographs will be used to control points fixed on the river bank by the astronomical ground party. Wireless messages are carried by the wireless station will permit the radio fixing of longitude by listening in on European time signals from Greenwich time. The survey will be completed by the new year.

Plan Air Service in Northern Malaya

The Air Survey Co., Ltd., is requesting for the operation of an air service in Northern Malaya. The proposal is strongly favored by public opinion, but the success of the venture is largely dependent upon government aid and contracts or subsidies from the governments concerned. The proposal provides for the organization of a new company to be known as Eastern Airways, Ltd., which will operate a daily air service between Penang, Port Swettenham, and Singapore. It is hoped that later the service can be extended to the Dutch East Indies. The company will begin operations with one plane of 300 ft. span, all metal, fitted with three engines developing 1,200 hp. and capable of a speed of 125 mph. There will be no accommodation for the passengers and crew of larger or smaller planes. There will be frequent smaller aircrafts of 200 ft. capable of carrying six passengers. The planes will be available for passengers, mails and light goods and the timetable will be arranged to meet connection with European mail ships. A service will be between Singapore and Penang daily except Sundays, leaving Singapore at 1 P.M. and arriving at Penang at 5:15 P.M. Late a schedule of flights to Batavia and Belawan will be inaugurated.

Air Traffic Increases at Copenhagen Port

The number of passengers arriving at and departing from the Kastrup Airport at Copenhagen was 8,782 during the last nine months of 1927, which was a much larger number than for the year 1926 and earlier periods. No passengers were carried during the first three months of 1925 or 1926 due to the continuing war. In 1925 passengers were 3,700 and 3,800 respectively. In 1926 passengers were carried from April through October and the total was 8,000.

The total number of aircraft arriving and departing during the first nine months of 1927 was 2,600 and 2,610 respectively for the period just mentioned. For the last nine months of 1926 and 1925, when the services were in operation, the numbers of aircraft arriving and departing were 2,654 and 2,238 respectively.

Of the 6,250 passengers arriving and departing from Kastrup during the first nine months of 1927, 3,219 arrived and 3,531 left. The heaviest traffic was between Copenhagen and Helsingør. 1,577 passengers arrived at Kastrup and 1,663 left in this service. Only a few passengers were carried between Copenhagen and nearby towns within Denmark.

Mining District Uses Planes

Air transportation to the remote mining district of Central and Northern Montana has been greatly facilitated during the present season in the work of the Western Mining Air Service, Ltd., which has operated three airplanes with remarkable success. Five other seaplanes and eight light planes have been added to the equipment of the company shortly and additional planes are expected to have been ordered for delivery in the spring. Between Dec. 27, 1927 and Aug. 28, 1927, the company just past reached 3,895 passengers and 389,000 lb. of cargo freight.

The AIRSEDAN



Safety

Built under Department of Commerce Certificate of Airworthiness No. 12, Approved for 1000 lbs. by load.

INSURANCE

Full coverage will be granted for all passengers, because they cannot interfere with the controls.

SPECIFICATIONS

Seating Capacity	pilot and 4 pass
Weight Empty	2100 lbs
Wing Area	320 sq. ft.
Span	47 ft.
High Speed (sea level)	120 M.P.H.
Engine	Wright Whirlwind

EQUIPMENT

Self Starter, Metal Propeller, Compass, Air Speed Indicator, Navigation Lights, Tachometer, Altimeter, Clock, Fire Extinguisher, Fuel, Oil Pressure and Oil Temperature Gauge, Air Corps Thermometer, Strainer, and Fuel Valve, Erosion Minimizer with Muller and Cabin Heater, Metal Mail or Baggage Compartment.

The Ideal Commercial Plane

4

Price \$12,500 Flyaway
Completely equipped

BUHL AIRCRAFT CO.
Marysville, Michigan

Side Slips

By ROBERT R. GORDON

Commander Gordon is continuing his tour plan to take Easterners who travel here in the Arctic Region along the North Pole expedition route and "these Eskimos" of being never so far north of their respective routes. At this moment and yesterday they are not on track over these Arctic land routes and some readers will think it is a couple of months to make up a flight and not a summer in Green Bay New York east to them.

We'll continue our story this week with a new topic in New York growth and progress by the first aviation card to be for us here a bit about airline mail services and a short sugar thread here.

AIR MAIL MEDAL FOR LINDBERGH—Headlines there is a pleasurable item. He should have a medal.

A few months ago we expressed our doubts that any airmail or flying mail could ever be found by being mailed by air service, although the newspapers would always remain with confidence that "Airplanes Will Be Used To Secure"

Now news comes from Texas which either backs us up in this view. The numbers down there are something all sorts of fine points of catch the busters who have been killing sheep and goats while using airplanes for deer hunting. If the airmail business starts developing between sheep and deer within shooting range, we hope no "dead letter office" will be made to face hunting complaints or the outcome.

The following very touching letter came to us without signature or name. The postmark gives us a pretty good lead who sent it, but we'll let it ride without the usual outline:

MAIL BOX FOR VANISHED JENNIES

Who are the Indians now, my dear?—
Where are the stones of yesterday?
Who is—wherever—man's true
and the last rock—shattered and split up?
Who are the sounds—such calls
as the grand old ones that have not perished?
Where is the sun—where can we find him?
And where has not the star—centered in the center?
Where is the mountain who always had
Him? Who the ones in the direction and?
Where are the leaves gone, my dear?
Where are the stars of yesterday?

The Indian Arrow is lost, much more lost in the fires a tragic, awful path led him—on lonely, silent, desolate deserts. He wants back to life to tell the world, but is afraid his stock, would be found again if he were at about their ends. Why he is not so often about the possibility of his place becoming up country is stuck to not a controlling interest in the corporation.

Here's hoping that of Santa Claus' lots all come to his gate in case places open right down through skinned with a wadup load of health, prosperity and good things in life for the coming year. Merry Christmas.

AIRPORTS AND AIRWAYS

Minotaur City, Okla.

By LEON W. FERGUSON

C. E. Flanagan of Kansas City, division manager of the Kansas City Transport Co., has in Oklahoma City arranged a coalition with several business firms to the interest of Minotaur City of the oil road. It proved out to be over the night and good service could be established here in the spring as soon as intermediate landing fields could be mapped about the Chicago-Dallas air line and as soon as the beacon light system between cities is completed. Each day along the route is planned to run except while the Department of Commerce is conducting business between parts of the route. The line is lighted from Ponca City to Dallas. At Ponca City there the Federal Airlines Committee of the Federal Aviation Board.

The City Council has decided that the city will not charge extra fees or general advertising the commercial airport to the Chamber of Commerce for support. This is to aid the local oil companies could be served adequately. Twenty acres of the land is being estimated as possible in the Park. A parkland that has one of the oldest oilfield areas.

The engineer Hart has approved the plan for magazine the city from the air, for use in oil pipelines and power cables. G. W. Kuehling, of the Aerial Surveyors, Inc., says in

the city, however, working on a plan whereby all interested parties might cooperate in obtaining the name.

Mr. W. Parker, field manager of the airport, has announced that it is a 10-year joint one. Landing equipment in the new larger hangars will be done in sections throughout the winter. H. C. Morris planned these improvements. A. E. Everett is in the meantime at the post.

Mr. and Mrs. Tom Brownell, Mr. and Mrs. Paul Brownell and Frank Heuer look off recently from the field for a two day hunting trip in the southwest. They flew in the Oklahoma Aero Club's Stratospire-Douglas.

Tents and equipment have been moved out the new hangar and it is now ready for use. Bob Barberis is proud of the building, which is to shelter many planes.

Barney Wilks recently purchased two Beechcrafts from Bob Barberis.

The Tulsa Flying School is progressing and a goodly number of pilots have been graduated. Several engines have been purchased for use in the instruction of students.

The service of an aileron has been made in the air mail, it has been announced, as a result of the completion of Kansas City's new airport.

The western committee of the Chamber of Commerce has adopted the slogan "Open All Roads" for the airport and W. C. Martin, chairman of the committee, has asked the Oklaho-

**Land Planes, Seaplanes,
Amphibians and Trans Oceanic
Flying Boats of ALL METAL
Construction . . . for Spring Delivery**

HUFF AIRPLANES, INC.
Perth Amboy, N. J.



Hidden values — those values built into an airplane which are not visible on the outside...

It is the hidden values in Travel Airplanes which give them their unusual dependability. Pilots and mechanics who watch the uses and operation of Travel Aer, see our most enthusiastic boast.

This June the availability of "Power On the Fly Travel" Let us tell you about it. Write us.

TRAVEL AIR, INC.
PASSENGER AND COMMERCIAL — WICHITA, KANSAS
Manufacturers in Wichita



FLEXIBLE STEEL WIRE SHAFTS

*for power transmission
around corners and over
obstacles — silent, steady,
durable, strong.*

The S. S. White Dental Mfg. Co.
Industrial Division
150 West 41st St., New York, N.Y.

Write for book.
Send for our report.



lize a large serial number under construction. A basic study course in connection with the Warren Board of Commissioners is proving quite popular.

This course is prepared by E. F. Harbin, director of instruction, and requires approximately a year and a half to complete. If the student enrolls for full time instruction at any time during that period the cost of his course is reduced from the regular tuition.

The text for this course is "The Aeroplane—Construction and Operation and Maintenance," by John B. Brittain; this book is supplemented by descriptive and illustrated lesson sheets made up by Mr. Harbin.

Under the supervision of Dr. A. A. Merrill, head of the California Institute of Technology, Department of Aeronautics, the Geophysical Field for the French School of Aeronautics has been completed for the construction of a glider aircraft at Harvey playground, 2657 Los Feliz Street, Los Angeles.

This project will be modern in every respect which concerns the flying of model aircraft. Factory facilities will be provided and a launching apparatus designed by Dr. Merrill is to be constructed. Model flying will be carried on with the supervision of regular physiognomical authority.

Night flying over the Los Angeles-Barstow area is also well to commence upon the completion of the thirty new houses, required for the construction of which was recently awarded to Almon G. Rice, of Los Angeles, according to Capt. H. W. Rhodes, supervisor of lighthouses.

Radiotelephone bases will be installed between Los Angeles and Fresno and between Fresno and San Francisco. The installation will consist of power installations, 50 fifty-foot tower and will give a range of 100 miles.

The first radiotelephone base will also be laid out and lighted, by the intent of the contractor, in addition to the other fields at Bakersfield, Fresno and Concord. The completion of the work is expected shortly after the first of the year.

Airport Report Submitted

Los Angeles started a pilot course to commence at a new municipal airport with the report of efficiency director Kline to the city council. Finance Committee spent the funds of the seven cities toward construction.

Vic Field, the terminal of Western Air Express, was given the highest rating on physical features.

The ratings were as follows:

Vic Field, 7.2 miles distant, (from the Los Angeles) 100 acres, 437 acres at \$3700 per acre, 1 in width, 300 ft. 3 in power line hazard, 2 in physical features, 2 in general, 2 in accessibility, and 1 in landmarks and fire protection. Bement Field, 22.5 mi. distant, 3000 acres at \$10000.00, 1 in width, power line hazard and service, 2 in physical features and fire protection, 3 in elevation and landmarks, 4 in width and accessibility.

Vic Field, 7.2 miles distant, 665 acres at \$32000.00, 1 in width, power line hazard, service and fire protection, 1 in physical features, grading, and landmarks, 3 in width and accessibility.

Miles Field, 13.4 mi. distant, 600 acres at \$30000.00, 1 in width, power line hazard, physical features, grading and landmarks, 2 in landmarks and fire protection, and 3 in width and service.

Douglas Field, 13.5 mi. distant, 665 acres at \$3000.00, 2 in power line hazard, grading, landmarks, accessibility, fire protection, 3 in width, physical features and service, 4 in fog.

Hanford Field, 5.5 mi. distant, 340 acres at \$60000.00, 2 in width and landmarks, 2 in width accessibility, accessibility service, 3 in fog, physical features and fire protection.

4 in power line hazard.

El Cajon Field, 4.8 mi. distant, 600 acres at \$3000.00, 2 in 1, 2 in width, accessibility, landmarks, accessibility, service and fire protection, and 4 in power line hazard, physical features and grading.

St. Louis Airports, 8th and Western Aves., Los Angeles, was recently reorganized and is now operating with Bill Dierck as president, Ed Narro, vice-president, W. H. Hall, secretary-treasurer, Eras "Ole" Olson, chief pilot, and Alvin Klemm, assistant pilot.

A few days ago new Alexander Eaglenook engines and a British monoplane on the line and is giving all credit in division on the most modern planes.

On the reorganization a new double hangar has been erected and two more are under construction; a complete repair shop has been installed with Bob Gray as chief mechanic; a low wing monoplane tract has been removed from the eastern boundary of the field and the runway has been leveled and treated with a mixture of oil and water to keep the dust.

W. H. Hall, Eaglenook, was recently opened with a big air show which included parachute drops by Robert Wilson and McLaughlin, both of that town, where a short eight miles southwest of Los Angeles.

The new Fisher Universal engine monoplane flew over by Jack Flynn, proved to be the fastest of the afternoon and helped to attract a crowd of more than 5,000 spectators.

San Diego, Calif.

By E. E. Harbin

The R. P. Mahoney Aircraft Company has recently delivered a Whirlwind monoplane to R. F. Hartland, of Toledo, Ohio. Mr. Hartland is a distributor for the Mahoney monoplane and has his second plane. Capital Airlines, of Worcester, Mass., P. O., has taken the distribution rights for the Ryan Biplane and the Van Heusen Aircraft Co., Atlanta, Ga., has its last two Whirlwind monoplanes sent by rail, as planes were too long to take delivery via the air route.

In addition to the R. P. Mahoney Aircraft School at El Cajon there is one of the most complete on the west. The course has been enlarged to include complete field and flying instruction, with regular cross-country work every summer.

A series of experiments were recently filed by the Profitable Design Aircraft Co. These concern the production field equipped to take a prominent place in the industry. The company has been working on a synthesis until the four-stage all-metal tri-motor monoplane was tried out. After several trials, final, the configuration was formed. The aircraft is a heavy plane. Plans have been installed and very nearly ready for production with short delay.

A component has been made by T. Claude Rana, president of the Ryan Aeroplane Corporation, for the horizontal stabilizer arm to meet the requirements for the delivery of 200 Ryan Monocoupe engines to several manufacturers. During the last two months the corporation has disposed of 21 of these engines to various airplane manufacturers. Three of these are fitted to the Ryan monoplane.

D. C. Kellogg, chief instructor on Mahoney Field reports that his class has had no ill effects as a result of his long, 1½ miles over a foggy lake. Kellogg jumped into the water.

To those only one measured man on Mahoney Field, says instructor John Van der Linde. Two letters should be filed with each of B. P. Mahoney Aircraft Corporation.

J. C. Edwards, sales manager of the Mahoney Company and also Clark Polk, of the Capitol Airways, Washington, D. C., received the official welcoming committee to greet the

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